

HEADQUARTERS  
UNITED STATES ARMY MATERIEL COMMAND  
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MARKING AND PACKING OF SUPPLIES AND EQUIPMENT

PACKAGING OF ARMY MATERIEL

Paragraph

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## CHAPTER 1

## GENERAL

1-1. Purpose. The purpose of this regulation is to provide uniform packaging policies for the procurement, storage, issue, and shipment of Army materiel, excluding munitions items such as nuclear ordnance in Federal supply classification (FSC) group 11-series, ammunition and explosives in FSC group 13-series, and their related parts.

1-2. Scope. This regulation applies to Headquarters, U.S. Army Materiel Command (AMC); AMC major subordinate commands (including subordinate installations and activities); project managers; and separate installations and activities reporting directly to Headquarters, AMC.

1-3. Definition. Packaging. For the purpose of this regulation, the generic term "packaging" includes cleaning, preservation, packaging, packing, marking, and outloading (loading, blocking, and bracing), as applicable.

1-4. Policies. The policies for packaging by or for the Army, regardless of where performed, will be in accordance with AR 700-15, and as outlined in this regulation. Army materiel will be provided protection from damage or deterioration in order to assure serviceable condition from the time of production to the time of use. Adequate protection of Army materiel will be accomplished in the most economical manner consistent with shipment and storage protection requirements. Marginal protection that would compromise the serviceability or reliability of materiel during shipment or storage cannot be tolerated.

1-5. Responsibilities. Packaging responsibilities of AMC major subordinate commanders, project managers, and commanders of separate installations and activities reporting directly to Headquarters, AMC, are set forth in AMCR's 10-38, 10-44, and 700-18. Installation and activity commanders are responsible for implementation of, and adherence to, packaging policies within their installations and activities.

1-6. Objectives. The objectives of these packaging policies are to:

- a. Provide for all Army materiel efficient and economical protection against deterioration and damage during handling, shipment, and storage from acquisition until use.
- b. Assure the greatest practicable uniformity in the development of requirements for packaging of the same or similar items.
- c. Simplify, modernize, and standardize packaging procedures and operations.

d. Effect economies by assuring the use of proper packaging materials and shipping containers of minimum weight and cube consistent with anticipated handling, storage, and shipping hazards.

e. Effect packaging coordination between commands, installations, and activities.

f. Foster an understanding of packaging responsibilities, objectives, policies, and requirements and stimulate progressive thinking and planning in all packaging fields.

## CHAPTER 2

## VARIATION, USE, CONTROL, AND EVALUATION OF PACKAGING REQUIREMENTS

## Section I. SPECIFICATIONS, STANDARDS, AND INSTRUCTIONS

2-1. Types and precedence. The packaging data file of the Army Master Data File (AR 700-1) prepared by commodity commands will be used to determine the applicable reference for packaging requirements. In the event that a particular item is not covered in the packaging data file, the order of precedence will be as follows:

- a. Packaging data sheets (or packaging standards).
- b. Packaging requirement codes.
- c. Detailed packaging specifications and standards.
- d. Commodity specifications (sec. 5, Preparation for Delivery, of these specifications).
- e. Interim packaging instructions.
- f. General packaging specifications and standards.
- g. DA technical publications (supply bulletins (SB's), technical bulletins (TB's), technical manuals (TM's), etc.).
- h. Methods of preservation (MIL-P-116).

2-2. Preparation. a. Specifications and standards. Packaging and processing requirements in Federal and military specifications and Federal and military standards will be prepared in accordance with the procedures established in Standardization Manual M200A (AR 715-10), Standardization Policies, Procedures, and Instructions. Detailed requirements that exist in a separate packaging or processing specification or a packaging prescription will not be repeated in commodity specifications in lieu of a reference thereto.

b. Coordination of Standardization documents. Coordination of the following standardization documents will be effected with the AMC Packaging, Storage, and Transportability Center (short title: AMCPSTC), Tobyhanna Army Depot, prior to final publication:

- (1) Documents in the "PACK" area (see para 3n, AMCR 10-44).
- (2) Documents covering packaging materials.

(3) Packaging or preservation (processing) documents not in the "PACK" area.

c. Technical publications (TB's, TM's, etc.). Technical publications will be prepared in accordance with AR 310-3 and this regulation.

(1) Packaging and preservation (processing) requirements included in technical publications will be based on, and be in accordance with, requirements established in applicable military specifications, standards, or instructions developed by the responsible research and development (R&D) or engineering activity. Requirements in technical publications will be maintained in a current status to conform to the latest specification(s), standard(s), or instruction(s).

(2) Coordination of technical publications (changes, revisions, and letters of instruction) that are pertinent to packaging or preservation (processing) will be effected with AMCPSTC prior to final publishing.

2-3. Listing. A list of applicable publications (except data sheets and packaging requirement codes) is contained in SB 9-156, Publications for Packaging Army Supplies.

## Section II. LEVELS OF PROTECTION

2-4. General. Preservation, packaging, and packing methods and materials prescribed in specifications, standards, and instructions for the various levels of protection and used in depot and contractor shipments will meet the performance criteria for these levels set forth in AR 700-15. Selection of levels of protection for the shipment and storage of materiel will be in accordance with AMCR 746-1. The packaging for the levels of protection will conform to those requirements established in specifications, standards, and instructions.

## Section III. CONTROL AND EVALUATION

2-5. Control of repackaging. Materiel in depot stocks being selected for shipment will not be repackaged merely to comply with current specifications, technical instructions, etc., except when deterioration or damage to the item is evident or would occur during the expected shipment and storage life. When repackaging is required, it will be accomplished to conform with current packaging requirements for the applicable level of protection. However, only those parts of the existing package that are not capable of providing the required level of protection will be corrected. Materiel will be remarked in accordance with MIL-STD-129 and this regulation. Materiel will be repacked when tare weight and cube can be reduced for air shipment without compromising the required level of protection.

2-6. Packaging and processing guidance. a. AMC commodity commands and AMCPSTC are the designated activities for receiving, evaluating, and approving or disapproving requests to modify existing packaging requirements of contracts or in depot operations.

b. Coordination of packaging and preservation (processing) modification.

(1) Contract or procurement activities will coordinate proposed changes to the packaging and preservation (processing) provisions of the contract with the commodity command responsible for the item.

(2) Depot activities will coordinate proposed packaging and preservation (processing) modifications with AMCPSTC. Further coordination with the responsible commodity manager for the item will be accomplished by AMCPSTC, when deemed applicable.

c. Notice of packaging or preservation (processing) modification.

(1) The authority, and the month and year the approval for a packaging modification was given, will as a minimum be shown on the shipping document. Materiel from procurement will have the modification described on the procurement receipt document.

(2) Preservation (processing) modifications will be indicated on a weather-resistant card attached to the DD Form 1397 (Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines), or DA Form 2258 (Depreservation Guide for Vehicles and Equipment), as applicable, accompanying unboxed materiel. Notations should be brief, understandable, and descriptive of the preservation (processing) modification. In addition, the authority and date of approval will be shown on the card.

2-7. Analysis of packaging. a. Objective. The objective of packaging analysis is to determine corrective or improvement measures where inadequate, excessive, or otherwise questionable packaging is detected or suspected in a particular packaging requirement or application. The principles of value engineering will be used as a guide in the analysis of packaging design and performance, standardization of existing method employed in the packaging of materiel, and reduction in the cost of packaging.

b. Participation in the program.

(1) AMC installations and activities will participate in the program as follows:

(a) Provide AMCPSTC with the Federal stock number (FSN) and Federal item name of items that indicate packaging improvement and packaging value engineering possibilities. AMC Form 1225 (Request for Packaging Analysis) card is available for this purpose.

(b) Provide AMCPSTC reasons why the package should be analyzed.

(2) AMCPSTC will participate in the program as follows:

(a) Analyze packaging requirements based on DD Form 6 (Report of Damaged or Improper Shipment) reports, document review, and field assistance observation during liaison visits.

(b) Receive requests for packaging analysis from installations and activities.

(c) Analyze the current packaging methods or procedures to determine their adequacy and develop adequate packaging methods.

(d) Coordinate proposed packaging methods, procedures, or changes with the appropriate commodity command packaging activity for review and concurrences.

(e) Advise the requesting activities of the action taken or contemplated.

(f) Furnish appropriate activities and AMC major subordinate commands information on savings that can be reported in area IIIc8 of the Army Cost Reduction Program (AR 11-20, AMCR 11-12, and SMCR 11-3).<sup>1</sup>

(3) Packaging activities at AMC major subordinate commands and Natick Laboratories will participate in the program as follows:

(a) Take appropriate action based on AMCPSTC's completed packaging analysis, after concurrence.

(b) Assure that revised packaging requirements are reflected in the applicable packaging instructions.

(c) Provide issue experience, when available, as supporting data when package logistics indicate an economic influence on the analysis.

(d) When deemed appropriate, advise the Director, AMCPSTC, by letter of any item that has packaging improvement and value engineering possibilities with reasons why the package should be analyzed. Provide information as requested in (1) above.

(4) Procurement activities will participate in the program by advising the Director, AMCPSTC, of any item that has packaging improvement and packaging value engineering possibilities. Provide information as requested in (1) above.

<sup>1</sup>This regulation is applicable to AMC depots only. Other AMC installations and activities will not requisition this document.



## CHAPTER 3

## UNIT PACKAGING, INTERMEDIATE PACKAGING, PACKING, AND MARKING

## Section I. UNIT AND INTERMEDIATE PACKAGING

3-1. Methods of preservation. a. General.

(1) Packaging requirements will assure that cleaning processes, drying procedures, preservatives, and other materials and methods are compatible in all respects with each other and with the item being packaged.

(2) Cleaning, drying, preservation, and packaging, as required by the item characteristics, will be accomplished in accordance with MIL-P-116 and this regulation.

(3) When specific preservation information is unavailable, TM 38-230, Preservation, Packaging, and Packing of Military Supplies and Equipment, will be used for guidance.

(4) It is the responsibility of each AMC commodity and subordinate command to constantly keep abreast of new developments in packaging methods and materials. When an activity initiates work on a new development, the Director, AMCPSTC, will be notified. When new methods and materials are developed and determined to be equal to, or better than, those now in use, they will be submitted to AMCPSTC with supporting data, including application and source for evaluation. AMCPSTC will periodically apprise all commodity commands of latest developments by furnishing pertinent data, such as extent of application, advantages, and resultant cost reduction, on methods and materials determined to be acceptable by tests.

(5) AMC activities proposing new developments in packaging methods or materials will submit such developments with supporting data to AMCPSTC for approval prior to use.

b. Preservatives. Of the preservatives listed in MIL-P-116, volatile corrosion inhibitor materials (VCI) and/or oil-type preservatives are preferred for the preservation of Army materiel. Primers are not treated as preservatives in MIL-P-116. However, primers conforming to TT-P-664 (or other approved primers) will be applied to those surfaces that are normally painted in end use. Primer is also preferred in lieu of contact preservative in certain other specific applications where removal is not required (e.g., MIL-P-46093 for brake shoes, brake drums, and interior of dust shield).

c. Methods of preservation.

(1) Preferred methods and submethods.

(a) The following preferred methods and submethods (MIL-P-116) are applicable for packaging the majority of Army supplies.

1. Method I.
2. Method IA-8.
3. Method IC-1.
4. Method III.

(b) These methods will be considered by activities responsible for the preparation of packaging requirements and by depot packaging personnel when packaging requirements for a particular item are not available. The sequence above does not indicate a preference of one method or submethod over another. The selection of any packaging method will be based on factors outlined in (2) below.

(2) Selection of method or submethod. In determining the method or submethod of packaging to be used for any item, the following factors will be considered in the engineering of packages:

- (a) Degree of protection required for the item.
- (b) Lowest cost commensurate with required protection.
- (c) Methods or submethods that:
  1. Require the least depreservation of the item at the time of use.
  2. Result in the least cube and weight consistent with required protection.
  3. Can be readily adapted to mechanization.
  4. Provide reuse of the container, when required, for recoverable items.
  5. Provide adequate protection to the item until used.

(3) Method II packages.

(a) Barrier material. Barrier material conforming to class 1 of Specification MIL-B-131 will be used for method II packages employing a flexible vapor barrier.

(b) Humidity indicators. Humidity indicators will be used when specified and will be either the plug type (MIL-P-26860) or card type (MS-20003).

(4) Unit packages.

(a) Only items or assemblies of items (sets) having the same stock number will be placed in the same unit package.

(b) Container selection and closure will be in accordance with table 1 where:

1. Packaging methods or submethods require the use of a container as part of the unit protection (methods requiring specific containers excepted).

2. Necessary to supplement unit protection with other containers for storage and handling purposes.

Table 1

<u>Specification</u>	<u>Title</u>	<u>Use and/or closure requirements</u>
UU-B-36-----	Bags, Paper(Grocers)---	May be used only when specified.
PP-S-30-----	Sacks, Shipping,----- Paper(Cushioned)	See notes 1 and 2.
MIL-B-117-----	Bags and Sleeves,----- Interior Packaging	See notes 1 and 2.
MIL-P-378-----	Plastic Film----- (Polyethylene Thin Gage)	To be used as bag material. See note 1.
PPP-B-566-----	Boxes, Folding,----- Paperboard	See notes 2 and 3.
PPP-B-636-----	Boxes, Fiberboard-----	Class domestic, use UU-T-106 Tape. Class weather-resistant, use PPP-T-76 Tape. See note 4.
PPP-B-665-----	Boxes, Paperboard,----- Metal-Stayed(includ- ing Stay Material)	See notes 2 and 3.
PPP-B-676-----	Boxes, Set-up,----- Paperboard	See notes 2 and 3.
MIL-B-43014-----	Boxes, Water-Resistant- Paperboard, Folding, Set-up and Metal Stayed	See appendix in specification.

Notes. 1. Closure may be by any adequate means, except when specified otherwise for a given method.

2. Use only when weight of contents is 10 pounds or less.

3. Closure will be accomplished as specified in the appendix of the specification.

4. Closure will be accomplished by using two strips of 2-inch-wide tape applied to the top and bottom seams or as specified in the appendix of the container specification. If the bottom of the container is closed with staples or adhesive (or a style of the 1-piece folder (OPF) container is used), only a single piece of tape on the top seam is required. When the interior container is used as a shipping container, closure will be in accordance with paragraph 3-4d(4), or with PPP-B-636.

(c) When it is more economical to accomplish method I or method III by using a bag (for the purpose of identification, unitization, or handling) closure may be accomplished by any means.

3-2. Intermediate packaging. Intermediate containers will conform to Federal Specification PPP-B-636, PPP-B-566, or PPP-B-676 (weather-resistant, grade) or MIL-B-43014; unless otherwise specified in detailed packaging requirements. Closure requirements will be in accordance with table 1. Additional guidance on the use of intermediate containers may be found in MIL-P-14232.

## Section II. PACKING

3-3. General requirements for exterior containers. Selection and use of shipping containers will be in accordance with AMCR 746-3, and paragraph 3-4, this regulation. When identical stock number items require more than one shipping container, the container will be of identical size and the contents will be of uniform quantity, to the greatest extent practicable. Material will not be repacked merely to meet this requirement.

a. Contents. Exterior containers (other than basic issue list items, "collection" type item or sets, and multipacks) will contain only items of the same stock number.

b. Size and cube. Size and cube of containers will be determined by consideration of at least the following essential criteria:

(1) Containers will be of a design that will provide the physical protection required for the contents.

(2) Container design selected will conform to governing container specification.

(3) Where possible, exterior containers that will accommodate the greatest number of items in the least number of containers will be used. Excepted are those single unit packs where the exterior container forms a part of the unit pack.

c. Multipacks. Multipacks are exterior containers used to consolidate shipment of two or more assorted items to a single destination when the total quantity of each item displaces less than 3 cubic feet. (This does not include items previously packed in exterior containers.) Multipack containers will meet the applicable level of pack required and must be capable of making single-trip shipments without damage to the inclosed packages. The total quantity of the same line item (unit and intermediate packages) will be positioned during packing to permit ready identification upon opening, or will be consolidated (by bagging, tying, bundling, wrapping, cartonizing, etc.) and identified before being placed in a multipack container. Multipacks weighing over 250 pounds or measuring over 20 cubic feet will be provided with skids or pallets to facilitate handling. (See para 3-4g.)

(1) CONUS shipments. Commercial-type containers are authorized and preferred for CONUS multipacks.

(2) Oversea shipments. Multipack containers for outside CONUS shipments will meet the requirements for exterior containers specified in paragraph 3-4. Wirebound wood and triple-wall fiberboard consolidation shipping boxes, MIL-B-21827, may also be used, when these meet the level of packing requirements for a particular geographical area.

3-4. Selection and use of exterior containers. a. Factors to consider (see AMCR 746-3). Adequate protection and overall cost, in that order of importance, will be the controlling factors in selecting exterior containers. Selection will be guided by the following:

- (1) Degree of protection required for the item.
- (2) Physical characteristics of the item to be contained.
- (3) Initial cost of the container.
- (4) Weight and cube of the container.
- (5) Simplicity and economy of assembly and closure.
- (6) Handling and storage advantages of the container.
- (7) Availability.

b. Containers for level A and B shipments. Exterior containers listed below are available for use by Army elements and should be selected for use based on the factors in a above and the applicable level of packing.

Specifications

Containers

- (1) UU-S-48----- Sacks, Shipping Paper.
- (2) PPP-B-50----- Sacks, Shipping Paper, Reinforced.
- (3) PPP-B-576----- Boxes, Wood, Cleated, Veneer,  
Paper-Overlaid.
- (4) PPP-B-585----- Boxes, Wood, Wirebound.
- (5) PPP-B-591----- Boxes, Fiberboard, Wood-Cleated.
- (6) PPP-B-601----- Boxes, Wood, Cleated-Plywood.
- (7) PPP-B-621----- Boxes, Wood, Nailed and Lock-Corner.

- (8) PPP-B-636----- Boxes, Fiberboard.
- (9) PPP-B-640----- Boxes, Fiberboard, Corrugated,  
Triple-Wall.
- (10) PPP-C-650----- Crates, Wood, Open and Covered.
- (11) PPP-D-723----- Drums, Fiber.
- (12) PPP-D-700----- Drums, Metal, 55-Gallon (for Acid  
and Corrosive Liquids).
- (13) PPP-D-705----- Drums, Metal Shipping, Steel (Over  
12 and under 55 Gallons).
- (14) PPP-D-729----- Drums, Metal, 55-Gallon (For Ship-  
ment of Noncorrosive Material).
- (15) PPP-P-704----- Pails, Shipping, Steel (1 through  
12 Gallons).
- (16) MIL-C-104----- Crates, Wood; Lumber and Plywood-  
Sheathed, Nailed and Bolted.
- (17) MIL-C-3774----- Crates, Wood; Open 12,000- and  
16,000-Pound Capacity.
- (18) MIL-D-6054----- Drum, Metal; Shipping and Storage.
- (19) MIL-C-9897----- Crate, Slotted-Angle, Steel or  
Aluminum, for Lightweight air-  
frame components and bulky items  
(for maximum loads of 3,000 pounds).
- (20) MIL-C-11133----- Crates, Wood-Slotted Style, Wirebound,  
Domestic.
- (21) MIL-B-17757----- Boxes, Fiber-Corrugated, Modular Size.
- (22) MIL-C-22806----- Crates, Sheathed, Wood Wirebound.
- (23) MIL-B-26195----- Boxes, Wood-Cleated, Skidded, Load-  
bearing-Base.
- (24) MIL-D-40030----- Drums, Metal Shipping Steel, Light-  
weight, 55 Gallons.
- (25) MIL-B-43096----- Boxes, Pallet-Type, Material-Handling  
Wood, Wirebound.
- (26) MIL-B-43291----- Boxes, Fiberboard, Corrugated, Double-  
Wall, Weather-Resistant.

c. Use of wirebound boxes. When used or specified, wirebound boxes conforming to PPP-B-585, style 2, 2A, or 3, and constructed for type 3 loads are preferred for packing. Style 1 wirebound-boxes may be used when issue and inspection requirements do not require the box to be opened prior to use of materiel packed therein. Wirebound boxes designed for type 1 and type 2 loads, and wirebound boxes requiring special design for specific items, may be used when specified by the activity responsible for the packaging requirements of the item or when approved by AMCPSTC.

d. Use of fiberboard boxes.

(1) Fiberboard boxes will comply with the requirements of PPP-B-636, MIL-B-43291, and PPP-B-640 unless otherwise specified in this regulation. Appendix II reflects the normal weight and dimensional requirements for selecting fiberboard shipping containers.

(2) Fiberboard boxes for levels A and B will conform to class "weather-resistant" of PPP-B-636, MIL-B-43291, and class 2 of PPP-B-640. PPP-B-636 fiberboard boxes for levels A and B use will be selected from table II of the specification, following the criteria set forth under special requirements.

(3) Fiberboard boxes for level C will conform to Uniform Freight Classification Rules for rail shipments and National Motor Freight Classification Rules for truck shipments.

(4) Closure requirements for boxes conforming to PPP-B-636 will be in accordance with the appendix of that specification. The addition of two strips of 3-inch-wide tape conforming to PPP-T-60 or PPP-T-45 across the ends of containers already taped with one strip of tape conforming to PPP-T-76 on the center seam will be considered as meeting the exterior container closure requirement.

(5) Style E, PPP-B-640, boxes may be used for packs up to 1,000 pounds. Style G, PPP-B-640, boxes may be used for packs up to 2,000 pounds. Wood-pallet bases will be provided both styles of boxes when the load exceeds 250 pounds. Pallets conforming to MIL-P-15011 or MIL-P-3938 may be used. Closure of boxes will be by strapping in accordance with PPP-B-640.

e. Use of nailed wood boxes or similar wooden containers.

(1) Nailed wood boxes or similar wooden containers will not be used for shipping Army materiel or specified in packing requirements in individual specifications, standards, data sheets, or cards, and other documentation unless the circumstances for their use can be fully justified.

(2) Experience, environmental, geographical, or security considerations may be overriding factors in the use of nailed wood boxes or similar wooden containers in particular applications. Purchase request and consignee requests for use of nailed wood boxes or similar wooden containers under these conditions will be honored.



(3) Reusable and other engineered containers expressly designed for a particular commodity will be treated as an exception, in addition to those listed in paragraph 5b, AR 740-17.

(4) The use of nailed wood boxes conforming to PPP-B-621, style 4, is preferred. For economy, lumber that meets the minimum thickness specified by the container specification, will be used in lieu of the general practice of using 3/4-inch-thick lumber.

f. Strapping exterior containers. Exterior containers will be strapped in accordance with instructions contained in the appendix to the applicable container specification(s) except that containers conforming to specification PPP-B-621, class 1 (except styles 1 and 6) and class 2, need not be strapped for shipment to CONUS activities when they are:

(1) Packed with a type 1 or 2 load and do not exceed 220 pounds gross weight.

(2) Packed with a type 3 load and do not exceed 125 pounds gross weight.

Note. Shipments through oversea terminals are not considered as shipments to a CONUS activity.

g. Use of skids or pallets. Shipping containers weighing in excess of 250 pounds and those commodities that require a skid or pallet for handling will be skidded or palletized.

h. Containers for level C shipments. Containers selected for level C shipments will, as a minimum, conform to applicable carrier rules and regulations.

3-5. Packing parcel post shipments. a. General. Shipping of Army materiel via parcel post is desirable whenever this mode of shipment and the packages meet the requirements in AR 55-16, since:

(1) Direct movement from source of supply to user is permitted without intermediate handling in the Army logistics system.

(2) Overall economy is frequently attained through savings resulting from reduced packaging, packing, handling, documentation, and accounting.

(3) Customer satisfaction is improved by expeditious receipt of materiel.

b. Criteria for use of parcel post. Appendix I, AR 55-16, and the U.S. Postal Manual will be followed in determining the applicability of shipping by parcel post and the limitations placed upon such shipments by the U.S. Post Office Department.

c. Consolidation of parcel post shipments. Consolidation of parcel post shipments destined to the same consignee will be effected to the maximum extent practicable at source. U.S. mailbags will be used when suitable for such consolidation.

d. Exterior containers for parcel post.

(1) CONUS parcel post shipments. Any container capable of meeting postal regulations may be used (e.g., any container strong enough to retain and protect its contents from the weight of other mail). Cloth mailing bags are permissible for nonfragile items provided projections are cushioned to prevent rupture of the bag during shipment.

(2) Oversea parcel post shipments. Containers for oversea parcel post shipments will conform to applicable containers listed in paragraph 3-4 and:

(a) PPP-S-30, Sacks, Shipping, Paper, Cushioned.

(b) PPP-B-20, Bags, Cotton, Mailing.

Note. Fiberboard boxes will be 275-pound test stock.

3-6. Palletized loads. a. The methods, materials, and techniques to be used in palletizing Army materiel for shipment on standard, general-purpose pallets, will be in accordance with MIL-STD-147 or TM 743-200-1.

b. Items in containers or unpacked items, where issues justify, will be palletized into unit loads for shipment and storage.

c. AMC major subordinate commands, installations, and activities will develop engineered palletized unit loads by FSN and prepare a military standard (MS) sheet for each item where issue experience justifies palletization. Unpacked items or containers for the items designated for this type MS sheet will not be subject to dimensional variances that would cause the unit load design to be unusable.

3-7. Reusable containers. a. Guide in determining reusable containers. The following factors will be used as a guide in determining when the use of reusable containers is economically and logistically practicable:

(1) When the characteristics of the item are such that a reusable type of container is necessary.

(2) When the container can serve a dual purpose of shipping container and case while item is in use.

(3) When the cost of reusable containers is offset by multiple use as compared to the cost of single shipment disposable containers.

(4) When the need for periodic inspection or "exercising" justifies the use of a reusable container.

(5) When the item is designated as a recoverable, repairable item.

b. General design characteristics and limitations.

(1) Size. Reusable containers will be designed to insure minimum cubic displacement. Any disassembly of the item(s) contained therein will be limited to permit reassembly without use of special skill or tools and equipment.

(2) Blocking, cushioning, and securing items. Items will be blocked, cushioned, and secured in accordance with MIL-STD-1186.

(3) Lifting devices.

(a) Lifting devices will be designed and attached to containers so that they are capable of lifting the container and contents and will not interfere with stacking or increase the cube. When the lifting device does not meet the above lift capabilities and is only intended as a means to lift the top assembly cover, the container will be marked adjacent to the device: "LIFTING DEVICES INTENDED ONLY FOR LIFTING COVER FROM BASE. LIFT LOADED CONTAINER BY BASE ONLY."

(b) Engineering and specification preparing activities will assure the above features are provided in the design of containers when rigging cables will be used.

(4) Ventilation. Ventilation will be provided in fully inclosed containers (except dehumidified or pressurized containers) in accordance with MIL-C-104, unless otherwise specified in a detailed container instruction.

(5) Closure. Closure and securing of wooden containers will be accomplished by any means that will permit ease of reopening (screws, bolts, etc.).

c. Selection of reusable containers. When packaging requirements for an item specify a specific container, that container will be used. In the absence of specified reusable containers, containers will be designed in accordance with MIL-C-104, MIL-C-3774, or PPP-B-621, as applicable.

Note. Painting of wooden reusable containers is not required.

d. Care and maintenance.

(1) Wooden containers will be maintained by repairing or replacing damaged nut plates, structural members, corner straps, interior blocking, ventilators, hold-down brackets, bolts, etc. Repair of exterior sheathing by covering with type I, NN-P-515 plywood is authorized if it is more economical than replacing damaged or deteriorated boards. Painting will not be required.

(2) Care and maintenance of metal containers will be in accordance with TB 9-289 and TM 38-230.

3-8. Roll-on/roll-off (RO/RO) shipments. a. Roll-on/roll-off service is a method of highway and ocean transshipment of Army materiel loaded on highway semitrailers and wheeled vehicles, moving in an expedited shuttle service between CONUS shipping activities and oversea consignees.

b. The level of protection applied to materiel being shipped by RO/RO will be consistent with the issue priority designators indicated on the requisition covering the materiel in question; however, vehicles will be processed for shipment in a driveaway condition.

c. Marking requirements will be as outlined below:

(1) Identification markings are required on all shipping containers within a load.

(2) Vehicles will be marked in accordance with the applicable Vehicle Preservation Specification, MIL-STD-129, and paragraph 3-10 of this regulation.

(3) The requisition and package number is required on each container within the shipment except when the entire shipment is contained within a single trailer or cargo transporter and is destined for a single consignee.

(4) Trailer loads of Army materiel will be marked by stenciling on the marking plates provided on the side and rear of the trailer. The markings, applied in gasoline-soluble white paint, will consist of weight, cube, and oversea address. Loads containing more than one requisition will be assigned a separate transportation control number, using the earliest required delivery date (RDD) on the load.

3-9. Use of liners and shrouds. a. General. Waterproof barriers such as crate-panel liners and shrouds are primarily intended to protect packaged materiel by shedding free water. In addition, when properly used, waterproof barriers will afford a degree of protection from dust, dirt, and other foreign matter. Panel liners and shrouds are not considered to be case liners.

b. Case liners. Sealed case liners will not be utilized in the packing of Army materiel unless specifically required by applicable instructions. Instructions prescribing the use of sealed case liners are subject to review by the AMCPSTC.

c. Shrouds.

(1) Shrouds are used to protect items in unsheathed crates, pallet boxes, skid bases, etc., by shedding water from the top and sides of the item.

(2) Shrouds will be fabricated from waterproofed paper conforming to Specification UU-P-271 or other waterproof material such as polyethylene sheeting (minimum thickness - 4 mils). The shrouds will extend to within approximately 6 inches of the bases of the containers. When the shroud is fabricated from more than one piece, all seams will be continuous and waterproof. Shroud material selected will be appropriate for the intended use.

(3) Shrouds will be secured and arranged to avoid formation of water pockets.

### Section III. MARKINGS

3-10. General. a. Identification markings. Identification markings, prescribed in MIL-STD-129, will be marked on unit, intermediate, and exterior containers.

b. Address markings. CONUS and oversea address markings will be in accordance with the following documents, as applicable:

- (1) MIL-STD-129.
- (2) Shipping orders.
- (3) MILSTAMP regulations (AR 55-10).

c. Depot inspection markings. Depots will apply inspection date, inspection identification, installation identification code, and condition reservation code to all exterior containers being shipped under MILSTRIP (AR 725-50) issue priorities 16-20. This information need not be applied to containers shipped under issue priorities 1-15 or parcel post. These markings will be applied to the same side of containers as the address marking. These inspection markings will be applied by stenciling, stamping, or labeling. The Routing Identifier Code (app II-2, AR 725-50) shown in columns 4, 5, and 6 of the DD Form 1348-1 (DOD Single Line Item Release/Receipt Document) will be used for the installation identification code.

## CHAPTER 4

### TRAINING AND FIELD ASSISTANCE SERVICE

#### Section I. TRAINING

4-1. General. a. It is incumbent on the commander of each installation and activity to insure that personnel performing packaging functions in connection with engineering specification preparation, procurement, inspection shipment, and storage operations are afforded training in military packaging.

b. The resident courses available at the Joint Military Packaging Training Center (JMPTC), Aberdeen Proving Ground, Maryland, are the prime source of military packaging training. These courses cover preservation, packaging, packing, and carloading as well as special subjects, such as missile preservation and vehicle and equipment processing. The resident courses are announced in DA Pamphlet 20-21.

4-2. Local training. a. Local packaging and storage training programs are essential to the development and maintenance of packaging capability within installations and activities. Such programs provide training for personnel who do not meet the prerequisites for attendance at JMPTC as well as specialized training in the technical aspects of packaging.

b. Local training programs should include indoctrination in the following subjects:

- (1) Performance of packaging and preservation operations.
- (2) Packaging objectives and policies.
- (3) The economical, operational, and logistical effects of changes and innovations in procurement, distribution, transportation, and storage practices on packages.
- (4) Improvements, changes, and trends in military packaging as a means of keeping personnel abreast of developments.

c. Instructors selected for training should be graduates of the resident JMPTC courses.

d. JMPTC should be contacted for assistance in establishing local packaging training programs to meet the needs of particular installations or activities. JMPTC will provide the following assistance:

- (1) Selected training aids to support training at service schools and installations.
- (2) Supplementary special texts as training literature.
- (3) Films, film strips, and transparencies for distribution by appropriate Department of Defense exchanges.
- (4) Mobile training teams for presenting approved packaging courses and seminars to groups of personnel on-site or in selected locations throughout the United States.

e. The following examples of training aids are maintained in current status for use in local training programs:

- (1) DA Pamphlet 740-1-1, Instructors Guide for Packaging and Packing Operations, Preservation and Packing.<sup>1</sup>
- (2) DA Pamphlet 740-1-2, Instructors Guide for Packaging and Packing Operations, Packing and Carloading.<sup>1</sup>
- (3) Outline of Course 400-K-F5 (I), Preservation and Intermediate Protection.<sup>2</sup>
- (4) Outline of Course 400-K-F5 (II), Packing and Carloading.<sup>2</sup>
- (5) Training Films and Film Strips.<sup>3</sup>

## Section II. FIELD ASSISTANCE SERVICE

4-3. General. a. The AMCPSTC provides field assistance service to all elements of AMC installations and activities. This service will be accomplished by means of periodic liaison visits and special visits as requested by installations and activities. In addition, assistance will be provided to activities outside of AMC as requested or directed.

b. Commands and centers will be provided with advance notice of intent to visit procurement districts and contractor activities. Packaging and inspection organizations of command support activities will, to the extent practicable, participate in these liaison visits.

<sup>1</sup>Available through DA publications distribution channels.

<sup>2</sup>Available through Director, Joint Military Packaging Training Center, Aberdeen Proving Ground, Maryland 21005.

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4-4. Purpose of visits. These visits are for the primary purpose of:

a. Furnishing technical assistance in the packaging and storage of Army materiel.

b. Insuring that the latest packaging and storage policies, procedures, and requirements are available and are being adhered to.

c. Observing and appraising the adequacy and performance of packaging materials, processes, and instructions.

d. Advising personnel of procedures and practices to prevent packaging and storage breakdowns and bottlenecks, and provide recommendations to overcome deficiencies and to improve packaging operations.

e. Determining the need for correction of inadequate or uneconomical packaging requirements in specifications, publications, instructions, etc., and packaging practices in depot packaging operations.

f. Assuring appropriate AMC elements, through reports of visits, that effective programs of packaging and storage exist.

g. Providing technical guidance on the improvement of packaging and storage methods and techniques.

## CHAPTER 5

## CARLOADING AND TRUCKLOADING

5-1. General. Outloading procedures for rail and truck shipment of equipment (nonexplosive) and related components that are within the responsibility of the U.S. Army Materiel Command will be developed and disseminated as a support program to assure maximum safety and serviceability during transportation and storage. The established procedures will be compatible with the guidance and procedures contained in the Military Traffic Management Regulation (MTMR), AR 55-355.

a. Carloading. As required, carloading drawings, consistent with the established policies of the Association of American Railroads (AAR), will be developed for flatcar, box, gondola, and trailers-on-flatcar (TOFC) shipments of specific commodities as determined by the subordinate commands. In case of conflict between previous instructions and subordinate command drawings, the drawings will take precedence.

b. Truckloading. As required, drawings covering flat-bed, van-type, lowboy, and deep-well truck shipment of specific commodities will be developed as determined by the applicable activity. Procedures will be consistent with the basic principles of the MTMR and the Military Traffic Management and Terminal Service (MTMTS), acting in collaboration with local or national highway carrier associations. Truckloading will be consistent with all of the above. In case of conflict between previous instructions and subordinate command drawings, the drawings will take precedence.

5-2. Loading rules. The publications listed below contain instructions and/or references pertinent to rail and truck shipments.

a. AR 55-355 lists AAR publications and sources of supply and indicates policies for utilization of highway carriers.

b. TM 743-200-1, Storage, Materials Handling.

c. Interstate Commerce Commission Regulations and Uniform Freight Classification Rules.

d. Rules Governing the Loading of Commodities on Open-Top Cars, published by the Association of American Railroads. Most military equipment (nonexplosive) is loaded under requirements contained in section 6 of this AAR publication.

5-3. Test loading and test shipments. a. Purpose. Test loading and test shipments (AR 55-355) are conducted for the purpose of determining the adequacy of exterior containers, loading methods, blocking, bracing, and securing of rail or truck shipments and for developing new or revised loading rules.

4-4. Purpose of visits. These visits are for the primary purpose of:

a. Furnishing technical assistance in the packaging and storage of Army materiel.

b. Insuring that the latest packaging and storage policies, procedures, and requirements are available and are being adhered to.

c. Observing and appraising the adequacy and performance of packaging materials, processes, and instructions.

d. Advising personnel of procedures and practices to prevent packaging and storage breakdowns and bottlenecks, and provide recommendations to overcome deficiencies and to improve packaging operations.

e. Determining the need for correction of inadequate or uneconomical packaging requirements in specifications, publications, instructions, etc., and packaging practices in depot packaging operations.

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5-3. Test loading and test shipments. a. Purpose. Test loading and test shipments (AR 55-355) are conducted for the purpose of determining the adequacy of exterior containers, loading methods, blocking, bracing, and securing of rail or truck shipments and for developing new or revised loading rules.

(1) Carloading. Test shipments involve line-haul movements and are governed by Rule 49 of the current Consolidated and Uniform Freight Classification Rules, AAR Loading Rules, policies of the MIMTS, and applicable tariffs. Test loadings are conducted in the local area (contractor's plant, depots, arsenals, etc.) with rail cars being subjected to impacts which may be encountered during actual shipping operations. MIMTS will be apprised of and approve all proposed tests.

(2) Truckloading. Neither area organizations nor National Classification Board of the Motor Carrier Industry have published pamphlets showing uniform loading methods. The basic principles outlined in chapter 221, section IV, MIMR, will be followed when tests involving load test shipments are necessary.

b. Proposed changes, exceptions, or additions to loading rules. Any installation or activity proposing a change, exception, or addition to the loading rules contained in either the AAR publications or other technical publications will submit the proposal to the AMCPSTC for transmittal to the appropriate subordinate command. Request by a subordinate command that arrangements be made for appropriate tests at preselected installations will be routed through the CG, U.S. Army Materiel Command, ATTN: AMCTR, to the Commander, MIMTS, Washington, D.C. 20315. Subordinate commands will furnish an information copy of each request and subsequent correspondence to the AMCPSTC.

(1) Test loadings. Installations and activities proposing to conduct test loadings, to substantiate recommended changes, etc., will furnish all pertinent details of the proposed tests, including specifications, drawings, photographs, etc., when submitting proposals in accordance with b above.

(2) Test shipments. Installations and activities proposing a test shipment, to substantiate recommended changes, will assemble the same type of information outlined in (1) above, and submit it in accordance with b above.

(3) Action by MIMTS. Based on conclusions and recommendations on the tests involved, the Commander, MIMTS, on behalf of the subordinate commands, negotiates with the AAR or with motor carrier associations for promulgation of new or revised loading rules or regulations to reflect the loading requirements developed by the tests.

## CHAPTER 6

## MUTUAL SECURITY PROGRAM

6-1. General. a. Army materiel being prepared for Mutual Security Program (MSP) shipments will be afforded protection consistent with the applicable provisions of chapter 2 of this regulation. Additional criteria for furnishing supplies and services to foreign governments are contained in AR's 795-17, 795-21, 795-27, and 795-204.

b. Packaging of special MSP shipments will be in accordance with specific instructions issued for such shipments.

6-2. Marking. a. General. Requirements of AR's 795-17, 795-21, 795-27, 795-204, MIL-STD-129, and this regulation, will be followed in the marking of MSP shipments. Activities concerned with Mutual Security shipments will assure that emblems of prescribed design, quantity, and size are applied to these shipments in accordance with the requirements of MIL-STD-129.

b. Registration markings. United States registration numbers will not be applied to vehicles and attached basic issue items furnished under the provisions of the regulations referenced in paragraph 6-1. Existing registration numbers will be removed. In lieu thereof, United States registration numbers of approximately 3/8-inch in height will be stamped on lightweight metal tags which will be securely attached by soft wire to the left side of the front and rear of each vehicle.

6-3. Standards of appearance and serviceability for exterior containers. Exterior containers used for MSP shipments will be new or in like new conditions as to appearance and serviceability. However, it is not intended that MSP shipments be repacked in new exterior containers when existing containers can be economically restored to a like new condition employing the measures set forth in this regulation. When a choice exists between serviceable containers in stock that meet level A criteria, the containers selected will be those of the higher degree of serviceability and appearance. To maintain the standards that are required of exterior containers, it is essential that commanders of all AMC installations and activities establish procedures based on the following requirements:

a. Fiberboard boxes.

(1) V-board fiberboard boxes conforming to class 2 of Specification PPP-B-636 or triple-wall fiberboard boxes conforming to class 2 of Specification PPP-B-640 will be used as exterior containers for shipment to MSP recipients, when approved packaging instructions permit the use of these containers.

(2) Triple-wall fiberboard boxes conforming to class 2 of Specification PPP-B-640 are authorized for the shipment of multipacks to MSP recipients.

b. Wooden containers.

(1) New containers. Containers will conform to the requirements of applicable container specifications outlined in paragraph 3-4.

(2) Used containers. Used containers will be in accordance with the requirements defined in paragraph 6-3.

(3) Painted boxes. Boxes previously painted will be repainted, if required, to match, as nearly as possible, the original color. Spot painting will not be permitted. When partial repainting will suffice, a minimum of a single complete board will be repainted.

(4) Unpainted boxes. Unpainted boxes that are excessively discolored will be completely painted using MIL-P-52018, sand-colored paint (color 30277) of Federal Standard 595. Partial painting of previously unpainted boxes will be permitted for the purpose of obliterating markings as described in f below.

c. Special containers. Reusable containers and other containers that have been specially designed for an item or a group of items will be subject to the same appearance and serviceability standards as prescribed in preceding paragraphs applicable to container condition.

d. Metal containers. Metal containers with minor indentations, at other than seams or welds, will be acceptable. Repainting and any required maintenance will be accomplished as outlined in paragraph 3-7, except that spot painting will not be permitted.

e. Metal strapping. Strapping will conform to the requirements of Specification 00-S-781 or Specification 00-S-790. However, other authorized types of strapping previously applied will not be replaced provided the appearance and serviceability standards of this regulation have been met. Strapping that is rusted to a point that its appearance and serviceability are materially lowered and strapping that is improperly applied or loose will be replaced prior to shipment.

f. Marking. Marking will be in accordance with paragraph 6-2. Remarking for the purpose of correcting marking deficiencies on containers selected for shipment will be done with the same color and kind of ink or paint used in original markings.



## CHAPTER 7

## VEHICLE PROCESSING

7-1. Applicable categories of materiel. The applicable regulations listed in the appendix and the documents required under the specific category will govern the preparation for delivery and/or storage of the following categories of materiel.

a. Administrative, combat, tactical transport vehicles; rocket and missile systems; ground support equipment. Combat vehicle processing will be in accordance with the requirements of the applicable "Preparation for Shipment and Storage Military Specification." Wheeled-vehicle processing will be in accordance with the requirements of MIL-STD-281 for the level of protection required as implemented by:

- (1) Vehicle Preservation Data Sheets.
- (2) Military Specifications.
- (3) Drawings as applicable.

b. Materials handling equipment, self-propelled. Processing will be in accordance with the applicable commodity specification. Processing by depots, in the absence of applicable specifications, will be in accordance with the minimum requirements of MIL-STD-162 for the level of protection required.

c. Floating equipment (marine). Processing will be in accordance with the applicable commodity specification or detailed packaging specification. Processing by depots, in the absence of applicable specifications, will be in accordance with the minimum requirements of TB TC9 as supplemented by TB 746-93-4.

d. Aircraft, fixed and rotary wing. Processing will be in accordance with applicable technical manuals of the S-series (Preparation for Shipment) and the 20-series (Organizational Maintenance Manual), respectively.

e. Railway equipment (rolling stock). Processing will be in accordance with the applicable commodity or detailed packaging specification. Processing by depots, in the absence of applicable specifications, will be in accordance with the minimum requirements of TB TC14.

f. Construction, fire fighting, pumping, and water purification equipment. Processing will be in accordance with the applicable commodity or detailed packaging specification. Processing by depots, in the absence of applicable specifications, will be in accordance with the minimum requirements of TB 740-93-2 for the level of protection required.

7-2. Supply forms and records. Forms and records will be in accordance with prescribed procedures for the use, preparation, and disposition as required by the commodity command and the Department of the Army's Integrated Equipment Record and Maintenance Management System (AR's 750-1 and 750-5, and TM 38-750).

Appendix I

REFERENCES

- AR 15-450, Army Packaging Board.
- AR 700-15, Preservation, Packaging, and Packing.
- AR 700-58, Report of Damaged or Improper Shipment.
- AR 705-30, Department of the Army Preservation, Packaging, and Packing Program.
- AR 740-17, Excessive Packaging.
- AR 795-17, General Policies and Principles for Furnishing Army Materiel on a Grant Aid Basis.
- AR 795-21, General Procedures for Furnishing Supplies and Services for Oversea Civilian Aid Programs.
- AR 795-27, Procedure for Shipment of Missile Systems to MAP Recipients in Conjunction with Unit Training in the United States.
- AR 795-204, General Policies and Principles for Furnishing Defense Articles and Services on a Sale or Loan Basis.
- AMCR 10-38, Mission and Major Functions of the U. S. Army Supply and Maintenance Command.
- AMCR 10-44, AMC Packaging and Storage Center, Tobyhanna Army Depot.
- AMCR 700-18, Packaging of Army Materiel.
- AMCR 740-1, Preparation of Vehicles for Oversea Shipment.
- AMCR 746-1, Selection of Levels of Protection for Shipment.
- AMCP 706-121, Research and Development of Materiel Packaging and Pack Engineering.

## Appendix II

## FIBERBOARD CONTAINER SELECTION CHART

SIZE AND WEIGHT LIMITS OF DOMESTIC FIBERBOARD SHIPPING CONTAINERS <sup>1</sup>							
Maximum Weight Of Box and Contents (Pounds)	Maximum Inside Dimensions (LXWXD)	Single Wall		Solid Fiberboard Minimum Bursting Test	Double Wall See Note 2		Triple Wall See Note 2
		Minimum Bursting Test			Minimum Bursting Test		
20	40	125		125			
40	65	175		175			
65	75	200		200		200	
90	90	275		275		275	
120	100	350		350		350	
140	110			500		500	
160	120			600		600	
275	120						1100

WEATHER RESISTANT FIBERBOARD SHIPPING CONTAINERS <sup>1</sup>						
Maximum Weight Of Box and Contents		Maximum Inside Dimensions (LXWXD)	Single Wall and Solid Fiberboard		Double Wall <sup>2</sup>	Triple Wall <sup>2</sup>
			Grade Compliance Symbol			
30	20	30	W6S and W6C			
50	40	50	W5S and W5C			
90	70	80	V3S and V3C			
100	90	90	V2S			
110	100	100	V1S			
90	90	90			V15C	
120	120	100			V13C	
160	160	120			V11C	
275	275	120				1100

<sup>1</sup>The maximum weight and inside dimensions reflect the normal requirements for fiberboard shipping containers. See applicable container specification for special requirements.

<sup>2</sup>The load limit may be increased to 225 pounds for double-wall and 350 pounds for triple-wall providing the manufacturer's joint is stitched in accordance with the special requirements in Section 12, Supplement 9, Rule 41, Uniform Freight Classification 7.


AMCR 746-2

(AMCSU-RP)

FOR THE COMMANDER:

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